

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of:)	
)	
International Comparison and Consumer)	
Survey Requirements in the Broadband Data)	GN Docket No. 09-47
Improvement Act)	
)	
A National Broadband Plan for Our Future)	GN Docket No. 09-51
)	
Deployment of Advanced Telecommunications)	
Capability to All Americans in a Reasonable)	
and Timely Fashion, and Possible Steps to)	
Accelerate Such Deployment Pursuant to)	GN Docket No. 09-137
Section 706 of the Telecommunications Act of)	
1996, as Amended by the Broadband Data)	
Improvement Act)	

COMMENTS OF INMARSAT

Inmarsat, Inc. (“Inmarsat”) submits these Comments in response to the Commission’s request for comments on *Public Safety Issues Related to Broadband Deployment in Rural and Tribal Areas and Broadband Communications to and from Persons with Disabilities NBP Public Notice #14* released on November 2, 2009 in the above-referenced proceedings.¹ Inmarsat appreciates the opportunity to provide comments on this inquiry as part of the Commission’s larger effort to build a U.S. Broadband Plan. Inmarsat has previously participated in several related proceedings on its own² and as a member of the Satellite Industry Association (SIA)³ and

¹ *Public Notice, Comment Sought on Public Safety Issues Related to Broadband Deployment in Rural and Tribal Areas and Broadband Communications to and from Persons with Disabilities NBP Public Notice #14*, GN Docket Nos. 09-47, 51 and 137, DA 09-2369 (rel. Nov. 2, 2009) (“Public Notice”).

² *See, Reply Comments of Inmarsat Inc., Comment Sought on Spectrum for Broadband, NBP Public Notice #6*, GN Docket Nos. 09-47, 51 and 137, DA 09-2100 (rel. Sept. 23, 2009).

³ *See, e.g., Comments of the Satellite Industry Association, Public Notice, Comment Sought on Impact of Middle and Second Mile Access on Broadband Availability and Deployment, NBP Public Notice #11*, GN Docket Nos. 09-47, 51 and 137, DA 09-2186 (rel. Oct. 8, 2009).

the MSS/ATC Coalition.⁴ In these comments, Inmarsat responds to Question #16 in the *Public Notice* seeking information on the extent to which satellite broadband technologies can meet the communications needs of rural and tribal public safety entities by sharing information about its global broadband mobile satellite network and unique applications for mission critical voice and broadband communications.

I. Inmarsat's Broadband Mobile Satellite Network

Inmarsat, in an effort to respond to aggressive, highly competitive market forces, has continued to invest in new technologies for the diverse customer base that utilizes mobile satellite services. Over the last several years, Inmarsat has invested well over \$1.5 billion in the deployment of its fourth-generation, Inmarsat 4 (“I-4”) satellite network, which is today providing innovative mobile satellite services to the United States and globally on one of the most advanced mobile commercial communications satellite constellations now in orbit. In 2008, Inmarsat launched the third of its fourth generation satellites, the I4F3, completing world-wide coverage for our broadband capabilities, including Broadband Global Area Network (BGAN). After the successful launch of the I4F3, Inmarsat undertook a major satellite fleet repositioning process that is now providing more efficient coverage for Inmarsat users.⁵ In addition and at significant capital expense, Inmarsat completed construction of and was granted Commission authorization for a Satellite Access Station in Paumalu, Hawaii to connect BGAN user terminal traffic to the public switched network and the Internet.⁶

⁴ See, e.g., *Comments of MSS/ATC Coalition, Public Notice, Comment Sought on Defining “Broadband,” NBP Public Notice #1*, GN Docket Nos. 09-47, 51 and 137, DA 09-1842 (rel. Aug. 20, 2009).

⁵ See, Inmarsat Press Release, Inmarsat Broadband Goes Global (Feb. 26, 2009) announcing completion of global coverage for Inmarsat broadband services.

⁶ See, File No. SES-LIC-20080306-00242, Call Sign E080059 (granted Dec.18, 2008); File No. SES-MFS-20080228-00207, Call Sign KA 25 (granted Dec. 18, 2008).

In order to remain competitive in the dynamic market for satellite services, Inmarsat's I-4 satellite fleet has been designed and adapted to support a new class of novel IP-based communications, including BGAN service. Using highly portable and easily deployed "notebook sized" antennas that are one-third the size, weight, and price of traditional Inmarsat terminals, BGAN provides voice and broadband service at speeds of almost half a megabit per second. After plugging a BGAN terminal into a laptop computer with a USB cable (or using a WiFi or Bluetooth connection), mobile users of all types have an immediate means of communication anywhere in the United States (and globally), including in hard-to-reach areas rural or tribal areas, or when the terrestrial network fails.⁷ BGAN thus delivers significant public interest benefits both in rural areas (*e.g.*, by supporting medical imaging and other high data-rate medical communications needs), and for purposes of disaster relief.

II. Mission Critical Users of Inmarsat's Broadband Mobile Satellite Service

Inmarsat's BGAN terminals are used in the United States by many U.S. Government entities, including FEMA, the National Guard, and the U.S. military, state and local governments, law enforcement personnel, and critical industries such as mining and gas, to facilitate mission critical broadband Internet access and voice communications in all areas of the country, including where and when terrestrial networks are degraded or unavailable. With the higher data-rate capabilities and smaller, easier to use mobile terminals afforded by BGAN, first responders and private industry around the world have available a robust and quickly deployable communications alternative on a routine basis in hard-to-reach areas, or when the next natural disaster, or other domestic crisis, occurs.

⁷ See, Exhibit A for a list of available Inmarsat land BGAN terminals.

BGAN service is now a critical broadband communications tool for U.S. Government, first responders, industry and media in the United States.⁸ It is transforming public safety communications with a compelling combination of voice and high-speed data, completely independent of terrestrial networks. BGAN provides communications operability from the first moment of a disaster response, even when terrestrial networks are disrupted or in areas where they are unavailable. It also provides interoperability for first responders as they enter disaster or emergency areas with different communications devices. For example, BGAN technology is being used to create ad hoc networks by providing instant IP data and voice backhaul for pico cells and land mobile radio extensions.

First responder and public safety applications of BGAN include:

- Broadband mobile command post: email, Internet, VPN, telephony
- Connectivity between individual first responders, mobile command posts and off-site leadership, including using standard HF radios and cell phones
- Fixed or vehicular mobile command post: supporting multiple users from a single device via a WLAN
- Situational awareness using live video from isolated sites

Inmarsat's BGAN communications technology is currently deployed throughout the United States for the uses described above by public safety and first responder communities.

Specific examples of current BGAN use by well-known organizations include:

- Continuity of Government

⁸ Inmarsat's BGAN services are used because of their unique land mobile features by agricultural, media, relief agencies, and critical infrastructure industries such as oil and gas, construction and mining. For example, John Deere incorporates Inmarsat technologies on heavy farm machinery to improve precision farming techniques that prevent overuse of arable lands. Government organizations, civil and military, are also heavily reliant on BGAN services for mobile and secure last mile communications, especially when no other method of communication is reliably available. Government users often require time-critical communications with an exceptional level of availability, security and reliability. BGAN meets these requirements while offering greater speed, portability and versatility because it is able to offer simultaneous broadband data and voice services in a single device.

- New York Fire and Police Departments
- New Orleans Police Department
- Florida National Guard
- Large scale disaster response
 - Federal Emergency Management Agency (FEMA)
 - Urban Search & Rescue teams: California, Massachusetts
- DHS/U.S. Border Patrol
 - Live video surveillance
- DHS/U.S. Coast Guard
 - Boarding teams; harbor patrols
- Wildfire Suppression
 - CalFire/U.S. Forest Service/Los Angeles County
- Public Health
 - Emergency communications for Louisiana hospital system
 - Kentucky Department of Public Health Pandemic Response teams

In anticipation of and response to customer demand, Inmarsat has also launched companion BGAN services for aeronautical⁹ and maritime¹⁰ customers, known as SwiftBroadband and

⁹ Over 8,000 aircraft rely on global in-flight connectivity from Inmarsat as the most widely used satellite operator in the industry. Inmarsat was the first operator to provide global safety services that comply with the requirements of the International Civil Aviation Organization (ICAO), a United Nations agency. A single Inmarsat installation enables a diverse range of applications for both the cockpit and the cabin – from safety communications, weather and flight-plan updates, to access to the most fuel-efficient oceanic flight paths and transmissions of aircraft position and maintenance status to ground staff, to email, Internet and voices services. Outside the United States 20 international airlines offer mobile phone service on their aircraft to passengers in the cabin using Inmarsat services for the link to the ground. Every month approximately 19,000 commercial flights offer in-flight mobile phone service, serving over two million passengers.

¹⁰ Inmarsat plays an integral role in the lives of seafarers. When it comes to delivering reliable maritime communications and safety services, no other network can match the global reach and breadth of services. Many modern commercial vessels require highly efficient operation and management along with the need to meet the safety requirements of the Global Maritime Distress Safety System (GMDSS) developed by the International

FleetBroadband. Inmarsat also continues to improve service for all its customers. For example, earlier this year, responding to significant demand from broadcasters, Inmarsat announced the enhancement of land BGAN service by providing access to the world's fastest mobile video streaming by satellite.¹¹ This enhancement enables broadcasters to provide high-quality video transmissions that could be used to provide essential information to consumers in the event of an emergency event. Next year Inmarsat will introduce world-wide Global Satellite Phone Service (GSPS) over its I-4 geostationary fleet with a modernized handset. This handheld device is being optimized to operate over the I-4 network and is expected to be available in the United States in mid-2010. This offering will be well suited to meet a diverse range of public safety needs in all parts of the United States.

Inmarsat also provides critical global communications services to heads of state, including the President of the United States on Air Force One, as well as commanders in transit and at the scene of operations. Inmarsat provides reliable and secure access to command, control and information resources for leaders in the United States and around the world, no matter whether they are on land, sea or in the air.¹² On all these platforms Inmarsat mobile satellite service offers secure communications to permit leaders to communicate via email, Internet, file transfers, and videoconferencing. Applications offered over Inmarsat's service also include remote access to

Maritime Organization (IMO), a United Nations agency. Inmarsat service has been used to repel pirates who tried to attack a bulk carrier in the Indian Ocean by allowing the ship to alert naval units in the vicinity, as well as to provide piracy warnings in order to alert ships to incidents in the area. *See*, Inmarsat News, Pirates Thwarted Thanks to Inmarsat C (Feb. 13, 2009). Inmarsat also provides critical communications to the fishing industry, allowing for sophisticated fish-finding techniques as well as transmission of catch photos to shore to research and bid on the best catch prices on the Internet, via email, and phone while still at sea, regardless of weather conditions.

¹¹ *See*, Inmarsat News, BGAN X-Stream Delivers Fastest Video Streaming (Apr. 20, 2009) announcing launch of BGAN X-Stream service offering video streaming rates of up to 450kbps.

¹² Applications include multi-channel, high-quality telephony, messaging, email, Internet and government network access, safety communications, large file transfer (still images, audio and video), videoconferencing, telemedicine, STU-III encrypted communications, and real-time air-ground collaboration.

headquarters networks, weather and map updates, remote diagnostics, safety and back-up communications, as well as welfare and telemedicine communications.

All of the capabilities identified above that make Inmarsat's BGAN technology a unique solution for public safety agencies across the nation are especially applicable to rural and tribal areas because of the ubiquitous national (and global) footprint of Inmarsat's satellites.¹³ Inmarsat's inexpensive devices, reliable network, and mobile broadband functionality make it a key capability for public safety entities in rural and tribal areas that are hard to reach reliably by terrestrial infrastructure. Moreover, such mobile satellite-delivered broadband offerings ensure that public safety entities have access to communications even if the terrestrial networks are degraded or unavailable. Inmarsat and its partners will continue to work closely with the public safety community to investigate opportunities to bring our unique mobile broadband communications technology to the users that can put it to the best use.

For these reasons, Inmarsat respectfully requests that the Commission consider the above comments as it develops its broadband strategy.

Respectfully submitted,

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¹³ See, Exhibit B showing Inmarsat's three I-4 BGAN satellite footprints and spot beams for the United States and the rest of the world.

Exhibit A



BGAN terminals

A quick reference guide



● Inmarsat's Broadband Global Area Network service – BGAN – is accessible via a small, lightweight, satellite terminal, which is quick to set up and easy to use. And you can use the same device worldwide.

A range of terminals is available, providing performance options to suit different operational needs. The service is accessed via BGAN LaunchPad, a software interface, which is standard across all terminals.

						
	Wideye™ Sabre™ I Voice and data, single-user device	EXPLORER® 110 Smallest, lightest device in the range	EXPLORER® 300 Highly compact, robust device	EXPLORER® 500 High bandwidth, highly portable device	HNS 9201 High performance, multi-user device	EXPLORER® 700 Multi-user device with extensive functionality
Standard terminals	Manufacturer:	Addvalue Communications www.wideye.com.sg	Thrane & Thrane www.thrane.com	Thrane & Thrane www.thrane.com	Hughes Network Systems www.hns.com	Thrane & Thrane www.thrane.com
	Size:	259 x 195mm (1.6kgs)	200 x 150mm (<1kg)	217 x 168mm (1.4kgs)	217 x 217mm (<1.5kgs)	345 x 275mm (2.8kgs)
	Standard IP:	Up to 240/384kbps (send/receive)	Up to 240/384kbps (send/receive)	Up to 240/384kbps (send/receive)	Up to 448/464kbps (send/receive)	Up to 492kbps (send & receive)
	Streaming IP:	32, 64kbps (send & receive)	32, 64kbps	32, 64kbps	32, 64, 128kbps	32, 64, 128, 256kbps
	ISDN:	N/A	N/A	N/A	1 x 64kbps via USB only	2 x 64kbps
	Voice:	Via RJ-11 or Bluetooth handset/headset	Via RJ-45 ISDN handset, Bluetooth handset	Via RJ-11 or Bluetooth handset	Via RJ-11 or Bluetooth handset; 3.1 kHz audio	Via RJ-11 or Bluetooth handset; 3.1kHz audio
	Data interfaces:	Bluetooth, Ethernet – static and dynamic IP addressing	USB (with adapter), Bluetooth, Ethernet – static and dynamic IP addressing	Bluetooth, Ethernet	USB, Bluetooth, Ethernet	USB, Bluetooth, Ethernet
	Ingress protection:	IP 54	IP 44	IP 54	IP 54	IP 55

Broadband for a mobile planet™

Vehicular terminals	 EXPLORER® 527 Multi-user, trackable antenna		 HNS 9250 Multi-user, trackable antenna	
	Manufacturer:	Thrane & Thrane www.thrane.com	Hughes Network Systems www.hns.com	
	Size:	Terminal 403 x 483mm (5kgs) Antenna 500 x 150mm (5kgs)	Terminal 275 x 345mm (2.8kgs) Antenna 477 x 153mm (5.5kgs)	
	Standard IP:	Up to 448 / 464kbps (send / receive)	Up to 464kbps (send / receive)	
	Streaming IP:	32, 64, 128kbps (send & receive)	32, 64, 128, 256kbps (send & receive)	
	ISDN:	N/A	1 x 64kbps	
	Voice:	3.1kHz, 2-wire phone/fax	3.1kHz via ISDN handset	
	Data interfaces:	Bluetooth, Ethernet	Ethernet, ISDN, WLAN 802.11b	
	Ingress protection:	IP 56 antenna	IP 56 antenna	



How to buy BGAN

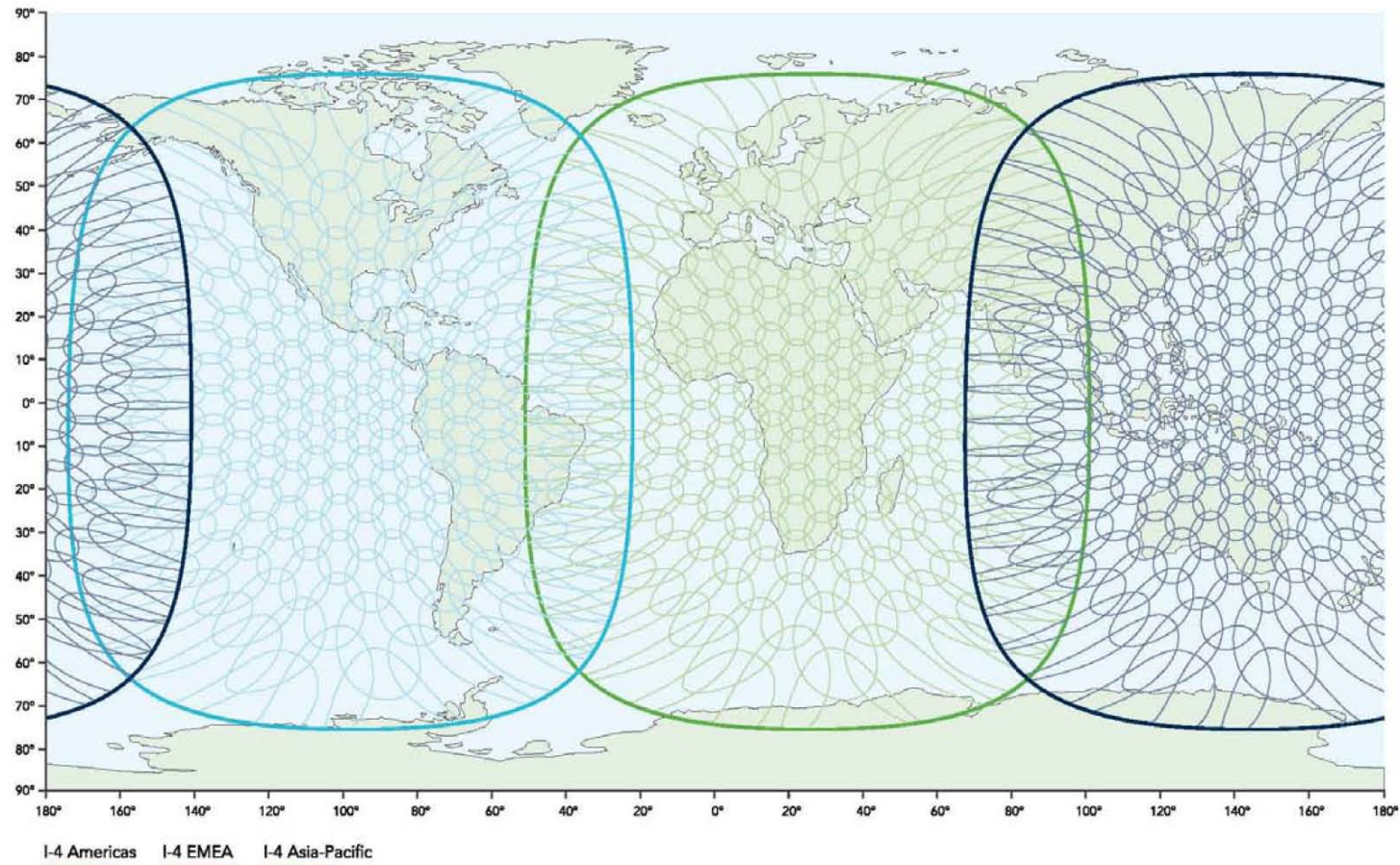
BGAN is available through Inmarsat distribution partners and service providers in more than 80 countries. Visit our website to find the right partner for your organisation.

inmarsat.com/bganterminals

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Exhibit B

BGAN coverage



This map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service.
The availability of service at the edge of coverage areas fluctuates depending on various conditions.
BGAN spot beam coverage February 2009.